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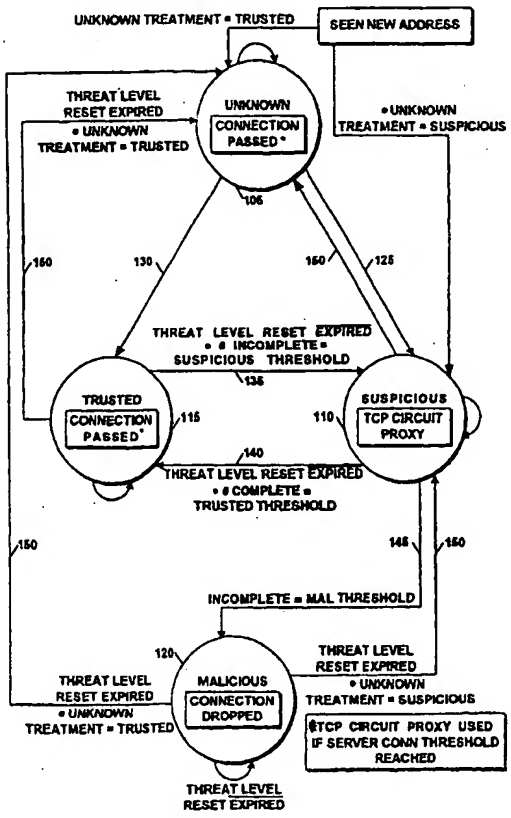
(54) Title: SYSTEM AND PROCESS FOR DEFENDING AGAINST DENIAL OF SERVICE ATTACKS ON NETWORK NODES




(57) Abstract: The present invention is a network switch that maintains a relatively lightly loaded state, and at the same time protects the network servers from DOS and DDOS attacks. The switch maintains a very large table of IP addresses where it stores information such as the number of incompleted and completed connections from each address. Using this information, the switch classifies each address into a threat level: unknown, trusted, suspicious, and malicious. Each threat level is treated differently allowing the switch to provide efficient access to the server while maintaining security. Connection to the server is denied to clients classified as malicious while trusted clients are passed through to the server. Suspicious connections are proxied while unknown connection treatment may be set by the user.

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patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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# INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04L29/06 H04L12/56

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | WO 99 48303 A (CISCO TECH IND)<br>23 September 1999 (1999-09-23)<br>abstract; figures 4,2 | 1,3,6,<br>8-10 |
| A | page 2, line 31 -page 3, line 22<br>page 7, line 21 -page 9, line 17 | 2,4,5 |
| | --- | |
| X | SCHUBA C L ET AL: "Analysis of a denial of service attack on TCP"<br>SECURITY AND PRIVACY, 1997. PROCEEDINGS., 1997 IEEE SYMPOSIUM ON OAKLAND, CA, USA 4-7 MAY 1997, LOS ALAMITOS, CA, USA,IEEE COMPUT. SOC, US,<br>4 May 1997 (1997-05-04), pages 208-223, XP010230160<br>ISBN: 0-8186-7828-3<br>abstract<br>paragraphs '0004!,'0005! | 6-9 |
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[X] Further documents are listed in the continuation of box C.

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| Date of the actual completion of the international search | Date of mailing of the international search report |
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| Name and mailing address of the ISA | Authorized officer |
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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
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